AMATS: Glenn Highway Integrated Corridor Management (ICM) Study

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DRAFT Integrated Corridor Management Study

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DOT&PF

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Table of Contents

Figures

Tables

Abbreviations

AADT	Average Annual Daily Traffic
ADEC	Alaska Department of Environmental Conservation
AFD	Anchorage Fire Department
AMATS	Anchorage Metropolitan Transportation Solutions
APD	Anchorage Police Department
ARRC	Alaska Railroad Corporation
ASD	Anchorage School District
API	Application Programming Interface
AST	Alaska State Troopers
ATMS	Advanced Traffic Management System
AVL	Automated Vehicle Location
CAR	Critical Accident Rate
CBERRRSA	Chugiak/Birchwood/Eagle River Rural Road Service
CCS	Continuous Count Station
CCTV	Closed-Circuit Television Cameras
CVFRD	Chugiak Volunteer Fire & Rescue Company, Inc.
CMS	Changeable Message Sign
CV	Connected Vehicle
DOT&PF	Alaska Department of Transportation and Public Facilities
EMS	Emergency Medical Services
ESS	Environmental Sensor Stations
FHWA	Federal Highway Administration
GUI	Graphical Unit Interface
HOT	High-Occupancy Toll (Lane)
HOV	High-Occupancy Vehicle (Lane)
HSIP	Highway Safety Improvement Program
JBER	Joint Base Elmendorf-Richardson
ICM	Integrated Corridor Management Study
I2V	Infrastructure to Vehicle
ITS	Intelligent Transportation Systems
KE	Kinney Engineering, LLC
LOS	Level of Service
MADT	Monthly Average Daily Traffic
MOA	Municipality of Anchorage
MSB/Mat-Su	Matanuska-Susitna Borough
MUTCD	Manual on Uniform Traffic Control Devices
MPT	Milepoint
MSB	Matanuska-Susitna Borough
MTP	Metropolitan Transportation Plan

MVD	Microwave Vehicle Detector
M&O	Maintenance and Operation
NHS	National Highway System
NOAA	National Oceanic and Atmospheric Administration
NTS	Not to Scale
OBU	On-Board Units
PCMB	Portable Changeable Message Boards
PDO	Property Damage Only
PM&E	Project Management & Engineering
PPP	Public Participation Plan
PHF	Peak Hour Factor
RSU	Roadside Unit
RWIS	Road Weather Information System
SAF	Speed Adjustment Factor
SaaS	Software as a Service
TIP	Transportation Improvement Program
STRAHNET	Strategic Highway Network
TAC	Technical Advisory Committee
TMC	Traffic Management Center
UPWP	Unified Planning Working Program
VSL	Variable Speed Limit
VTMC	Virtual Traffic Management Center

Definition of Terms

Average Annual Daily Traffic (AADT): A measurement of the number of vehicles traveling on a segment of highway each day, averaged over the year.

Controlled Access Freeway: Divided multi-lane highway without direct access to adjacent land uses. Users must utilize ramps to reach adjacent highway facilities with access to the adjacent land uses.

Crash Modification Factor (CMF): Factor associated with a safety treatment. Crashes for the condition without the safety treatment are multiplied by the crash modification factor to determine the number of crashes if the treatment is applied. CMFs are determined using a statistical analysis of sites with and without the treatment.

Integrated Corridor Management (ICM): Management of a transportation corridor to optimize use of available infrastructure by directing travelers to underutilized capacity (for example, shifting travel times, routes, or mode). Multijurisdictional partner agencies manage ICM corridors as collaborative, multimodal systems.

Intelligent Transportation Systems (ITS): Technology, application or platform that improves the quality of transportation, or achieves other outcomes based on applications that monitor, manage or enhance transportation systems.

Interchange: Set of ramps and intersections used to allow traffic to travel to and from a controlled access freeway facility.

Level of Service (LOS): Performance measure concept used to quantify the operational performance of a facility and present the information to users and operating agencies. The actual performance measure used varies by the type of facility; however, all use a scale of A (best conditions for individual users) to F (worst conditions). Often, LOS C or D in the most congested hours of the day will provide the optimal societal benefits for the required construction and maintenance costs.

Peak Hour Factor (PHF): Measure of traffic variability over an hour period calculated by dividing the hourly flowrate by the peak 15-minute flowrate. PHF values can vary from 0.25 (all traffic for the hour arrives in the same 15-minute period) to 1.00 (traffic is spread evenly throughout the hour).

Critical Accident Rate (CAR): Statistical measure used in crash rate analysis to determine statistical significance. If the crash rate of the location in question is above the upper control limit for that location, the crash rate is above the average crash rate for similar facilities to a statistically significant level.

1 Introduction

The Alaska Department of Transportation and Public Facilities (DOT&PF) has retained Kinney Engineering, LLC (KE) to prepare a Glenn Highway Integrated Corridor Management Study (ICM).

The Glenn Highway stretches 179 miles from Anchorage to Glennallen and provides the only northern access to and exit from Anchorage. A major thoroughfare for freight, commuter, and tourist travel to and from the Anchorage region, the Glenn Highway is classified as an Interstate by the Federal Highway Administration (FHWA) and is identified as part of the Strategic Highway Network (STRAHNET), a network of highways which are considered critical to US strategic domestic operations. The study area is the portion of the Glenn Highway contained within the Anchorage Metropolitan Transportation Solutions (AMATS) boundary. As depicted in Figure 1, the study corridor is located in the Municipality of Anchorage (MOA) and extends from MPT 0, at Airport Heights/Mountain View Drive to MPT 29.1, which marks the end of the MOA and the beginning of the Matanuska-Susitna Borough (MSB).

The study corridor experiences non-recurring congestion due to unplanned events (such as crashes) and planned events (such as road construction), that require lane closures and have a significant negative impact on the movement of people and goods. Numerous agencies and entities have studied methods to increase resiliency to non-recurring events along the study corridor and some improvements have been implemented. However, since delays on the Glenn Highway due to these events are very disruptive and are associated with significant time, safety and monetary costs, a more holistic approach, involving multiple local stakeholder groups, is needed to manage the corridor. The purpose of this ICM Study is to identify methods to improve the efficiency of the movement of people and goods along the study corridor through institutional collaboration and proactive integration of existing and future infrastructure.

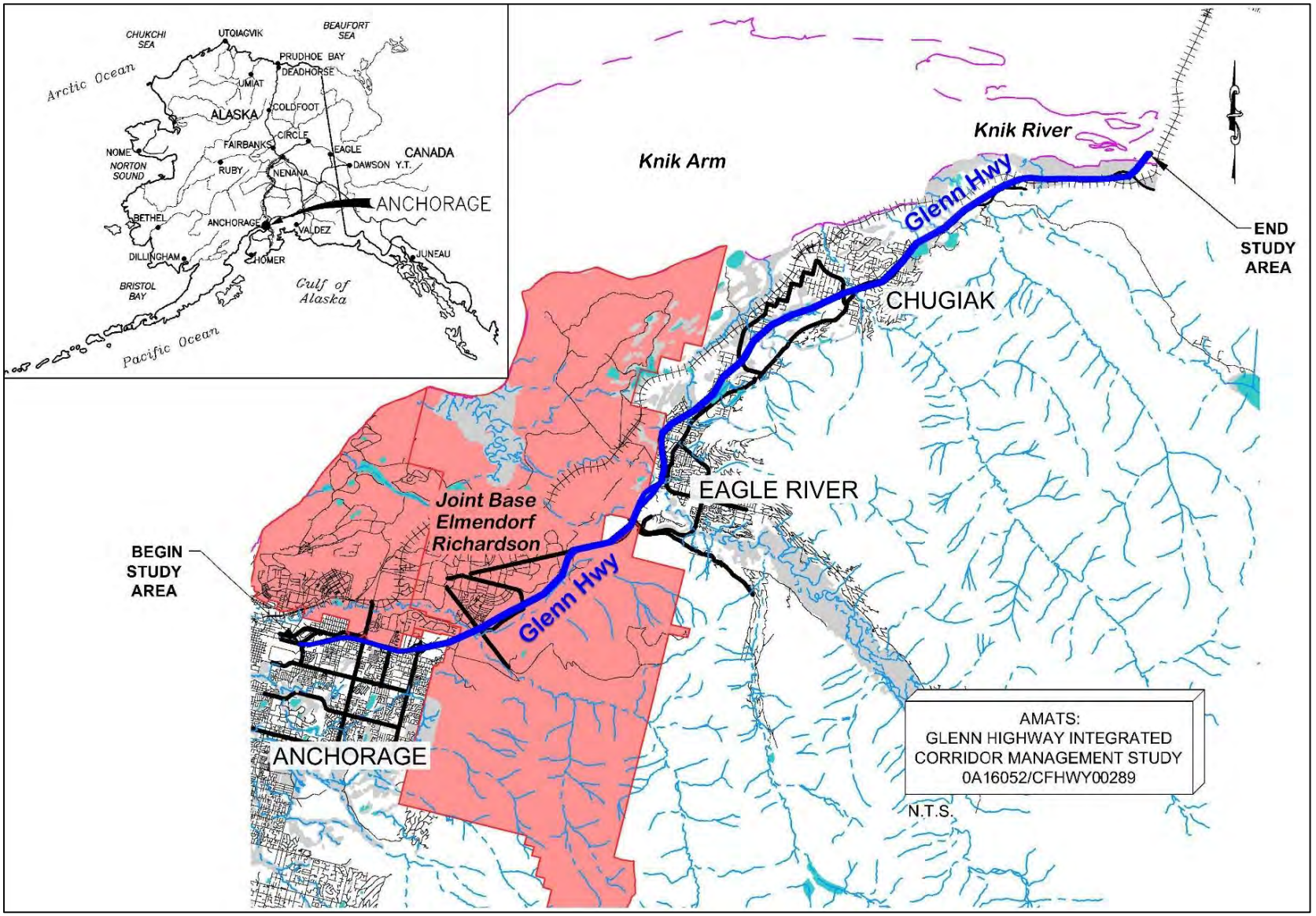

Figure 1: Vicinity Map

The study area includes 29.1 miles of Interstate freeway with grade separated interchanges. At the southern-most end of the study area, the freeway begins at the signalized intersection of Airport Heights Drive/Mountain View Drive. From Airport Heights Drive (MPT 0) to the Eagle River Loop/Hiland Road exit (near MPT 12), there are 3 travel lanes in each direction. North of the Eagle River Loop/Hiland Road interchange, the northbound lanes were recently reconstructed, and the 3-lane cross section now continues northbound to the Eagle River/Artillery Road exit. Meanwhile, there are only two southbound lanes between Eagle River/Hiland Road and Eagle River/Artillery Road. There are 2 travel lanes in each direction from the Eagle River/Artillery Road interchange to the Knik River Bridge (the northern-most end of the study area). North of the study area, the Glenn Highway continues into the Matanuska-Susitna Borough. Near MPT 35, there is a major interchange with the Parks Highway and the Glenn Highway continues north through Palmer until it connects with the Richardson Highway at around MPT 189.

Data for this Draft Integrated Corridor Management Study was collected through a variety of methods:

- Stakeholder Agencies: Surveys were sent to stakeholder agencies to understand current practices in managing the Glenn Highway, including the role of each agency during an incident, resources available to the agency, and the entities each agency collaborates with. The surveys were followed up with a Stakeholder meeting and one-on-one meetings which clarified the responses of the various agencies.
- General Public: An online interactive survey was prepared for the general public to understand the public's current concerns with the Glenn Highway, to ascertain how the public receives information about the status of the highway, as well as to determine what alternate routes or procedures the public currently uses in response to events on the highway.
- Highway Data: DOT&PF provided data that is currently being collected along the Glenn Highway, including weather, volume, speed, and crashes. This data was used to look into causes of crashes (which could be used to decrease the number of incidents, thus reducing non-recurring delay). In addition, the data was used to estimate the cost of non-recurring delay currently experienced by users of the highway.